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EXAMINER

VAUGHAN, MICHAEL R

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/540,219	Applicant(s) FISCHER ET AL.	
	Examiner MICHAEL R. VAUGHAN	Art Unit 2431	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-21, 23-30, 32, 33 and 35-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-21, 23-30, 32, 33 and 35-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/23/08 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Original application contained Claims 1-40. Applicant amended claims 1, 17, and 26. Claims 10, 22, 31, and 34 have been canceled. The argument filed on 10/23/08 have been entered and made of record. Therefore, presently pending claims are 1-9, 11-21, 23-30, 32, 33, and 35-40.

Response to Amendment

Claims

Rejection of claim 31 is hereby withdrawn as it has been canceled.

Drawings

The newly amended drawings are accepted and the previous objection is withdrawn.

Oath/Declaration

The Oath/Declaration has now been received in its entirety. Objection is withdrawn.

Response to Arguments

Applicant's arguments filed 10/23/08 have been fully considered but they are not persuasive for the following reason cited below.

Claim 1 and its dependent claims stand rejected under 35 USC 101 for being directed to unpatentable material. While claim is directed to a process, the Courts have ruled that for a process claim to be statutory it must be tied to one of the other types of patentable subject matter (i.e. machine, manufacture, or composition of matter) or transform a particular article. See *In re Bilski*. Transformation of computer data is not a physical transformation. Therefore Examiner finds claim 1 merely a process tied to software instructions. Software instructions per se, are not a machine, manufacture, or composition of matter. As such, Examiner respectfully disagrees with Applicant's argument and maintains the previous rejection under 35 USC 101.

Claim 17 and its dependent claims stand rejected under 35 USC 101 for being directed to the subject matter of software and lacking physical articles. Applicant has amended the claim to include storing a first signature in memory. However, the claim is directed to a device but it is not explicit the device is a piece of hardware. Devices can be hardware or software. Examiner can see what the intent was in the amendment but asserts that the added limitation does not solidify the claim as hardware. Memory per se, could also be just software or a person's memory. The device needs to be definitively drawn to hardware by having it connected to something physical. Software can process other software so the distinction needs to be drawn that this device is in

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fact some physical computing entity. As such, Examiner respectfully disagrees with Applicant's argument and maintains the previous rejection under 35 USC 101.

Claims 1, 17, and 26 and their depending claims stand rejected under 35 USC 102(e) as being anticipated by Naccache, USP 7,168,065. Examiner has fully considered Applicant's argument but is not convinced because of the following reasons. Applicant pointed to a passage by Naccache in col. 14, lines 8-13, whereby it appears that there is are no jumps in the sequence of the instructions. Applicant has tried to amend the independent claims around the assertion that Naccache does not teach having jumps in a sequence of instructions. Examiner interprets Naccache as follows. Naccache does not have jumps **inside of** a sequence but does teach the jumps at the **end of** the sequence. Alas, the jump is part of the sequence, perhaps just not somewhere in the middle. As Fig. 7 shows, the jump command which is the switch does in fact reside in the sequence of instructions. Naccache teaches in col. 14, lines 32-33 that the last instruction of the sequence [E11-j] controls the switching and is thus also subjected to hashing by the monitoring unit. The switch instruction is the jump instruction, just called by a different name. Naccache provides support for this in col. 14, lines 59-60, where he says the conditional jumps causes the switching to occur. Naccache merely chops up the instruction so that the jumps occur at the end of the sections so it can be easily hashed by only having one outcome. Each possible jump location is monitored as well. Examiner interprets the claim amendment to mean that a jump instruction is part of the sequence. Here giving within its broadest reasonable

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interpretation of *inclusive*. Therefore, Examiner must maintain the 35 USC 102(e) rejection that Naccache does teach this limitation. Dependent claims are also rejected by virtue of their dependency on independent claims and by others reasons set forth in the this office action.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The language of the claim raises a question as to whether the claim is directed merely to an abstract idea that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101.

Claim 1 is rejected under 35 U.S.C. 101 as directed to non-statutory subject matter. The claimed invention is nothing more than an abstract idea that is not a practical application producing a useful, concrete, and tangible result. A claimed series of steps or acts that do not result in a useful, concrete, and tangible result are not statutory within the meaning of 35 U.S.C. 101. In this instance case, the claims recite, a method which is tied to a non-statutory class, software program per se.

Claims 2-8 are rejected under 35 U.S.C. 101 as non-statutory for at least the reason stated above. Claims 2-8 are depended on claim 1; however, they do not add

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any feature or subject matter that would solve any of the non-statutory deficiencies of claim 1.

Claims 17-25 are rejected under 35 U.S.C. 101 as directed to non-statutory subject matter of software, per se. The claim lacks the necessary physical articles or objects to constitute a machine or manufacture within the meaning of 35 U.S.C. 101. It is clearly not a series of steps or acts to be a process nor is it a combination of chemical compounds to be a composition of matter. As such, they fail to fall within a statutory category. It is at best, function descriptive material per se.

Descriptive material can be characterized as either “functional descriptive material” or “nonfunctional descriptive material.” Both types of “descriptive material” are non-statutory when claimed as descriptive material per se, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994).

Merely claiming non-functional descriptive material, i.e., abstract ideas, stored on a computer-readable medium, in a computer, or on an electromagnetic carrier signal, does not make it statutory. See *Diehr*, 450 U.S. at 185-86, 209 USPQ at 8 (noting that the claims for an algorithm in *Benson* were unpatentable as abstract ideas because “[t]he sole practical application of the algorithm was in connection with the programming of a general purpose computer.”). See MPEP 2106.01 [R-6].

Claims 18-25 are rejected under 35 U.S.C. 101 as non-statutory for at least the reason stated above. Claims 18-25 are depended on claim 17; however, they do not add any feature or subject matter that would solve any of the non-statutory deficiencies of claim 17.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9, 11-21, 23-30, 32, 33, and 35-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 17, and 26 recites the limitation "the sequence of instructions" in the newly amendment limitation. There is insufficient antecedent basis for this limitation in the claim. The limitation makes the claim indefinite because one cannot ascertain the meaning of the limitation definitively. Is the sequence the same as the set or are they different somehow? How exactly are they related in the scheme of processing the program? Appropriate correction is required. The dependent claims are likewise rejected for at least the same reason.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-9, 11-21, 23-30, 32, 33, and 35-40 are rejected under 35 U.S.C. 102(e) as being anticipated by USP 7,168,065 to Naccache et al, hereinafter Naccache.

As per **claim 1**, Naccache teaches a method of making secure the execution of a computer program (EXE) including a set of at least one instruction, which method is characterized in that it includes:

- a first step (E30), prior to the execution of the computer program, of calculating and storing a first signature (SIG1) representative of the intended execution of the set of instructions (col. 4, lines 25-29),
- a second step (E50), during the execution of the set of instructions, of calculating and storing a second signature (SIG2) representative of the execution of the set of instructions (col. 4, lines 35-36), and
- a step (E60) of detecting an anomaly in the execution of the set of instructions on the basis of the first signature (SIG1) and the second signature (SIG2) (col. 4, lines 38-39), wherein said set of instructions comprising at least one critical instruction in the form of a jump instruction of any type within the sequence of instructions of said set of instructions (col. 14, lines 33-35).

As per **claim 26**, Naccache teaches a device for making secure the execution of a computer program including a set of instructions comprising at least one instruction, which device is characterized in that it includes (see abstract):

- a first register (REG1) (col. 4, line 8) for storing a first signature (SIG1) representative of the intended execution of the set of instructions (col. 4, lines 25-29),
- means (22) for calculating and storing in a second storage register (REG2) (col. 6, line 18) during the execution of the set of instructions a second signature (SIG2) representative of the execution of the set of instructions (col. 4, lines 35-36), and
- means (24) for detecting an anomaly in the execution of the set of instructions on the basis of the first signature (SIG1) and the second signature (SIG2) (col. 4, lines 35-36), wherein said set of instructions comprising at least one critical instruction in the form of a jump instruction of any type within the sequence of instructions of said set of instructions (col. 14, lines 33-35).

As per claim 2, Naccache teaches that the first calculation and storage step (E30) is executed during the generation [preparation] of the instructions (AI, AI3) of the computer program (col. 4, line 25).

As per claims 3 and 27, Naccache teaches that the second signature (SIG2) stored during the second calculation and storage step (E50) is retained in memory during the execution of at least one second instruction following the set of instructions

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(col. 5, lines 4-6 and 64-68). Naccache teaches using one the preceding values in memory to calculate the next value, so therefore it must remain in memory.

As per claims 4 and 28, Naccache teaches the first signature (SIG1) is obtained from the number of instructions in the set of instructions [accounts for each number of the instructions] (col. 9, lines 23-27),

- the second signature (SIG2) is obtained from the number of instructions from the set of instructions that have been executed [numerical value of executed instructions](col. 9, lines 31-35), and in that

the detection step (E60) detects an execution anomaly when the first signature (SIG1) and the second signature (SIG2) are different after the execution of the set of instructions [compare VHn to Vref] (col. 9, lines 60-64).

As per claims 5 and 29, Naccache teaches the first signature (SIG1) is obtained from the number of instructions in the set of instructions [accounts for each number of the instructions] (col. 9, lines 23-27),

- the second signature (SIG2) is obtained from the number [numerical value] of instructions from the set of instructions that have not been executed [next unexecuted instruction], this second signature (SIG2) being calculated from the first signature (SIG1) [recursive call](col. 9, lines 36-41), and

in that the detection step (E60) detects an execution anomaly when the value of the second signature (SIG2) is not zero after the execution of the set of instructions [compare VHn to Vref] (col. 10, lines 14-19).

As per claims 6 and 30, Naccache teaches that an interrupt of the computer program is triggered when the value of the second signature (SIG2) is below a predetermined threshold (col. 4, lines 40-47).

As per claims 7, Naccache teaches that the first signature (SIG1) and the second signature (SIG2) are retained in memory (col. 1, line 47) during the execution of the program in the same register (REG1) (col. 9, lines 13-17).

As per claims 8 and 32, Naccache teaches the first signature (SIG1) is obtained from the code of a critical instruction of the set of instructions (col. 4, lines 25-29),
- the second signature is obtained from the code of the critical instruction, that code being stored at the same time as or after the execution of the critical instruction [jump] (col. 14, lines 32-35), and in that

- the detection step (E60) detects an execution anomaly when the first signature (SIG1) and the second signature (SIG2) are different after the execution of the set of instructions (col. 10, lines 14-19).

As per claims 9 and 33, Naccache teaches the first signature (SIG1) is obtained from the address of a critical instruction (col. 5, line 51) of the set of instructions, the address being obtained during or after the generation of the executable code of the set of instructions (col. 4, lines 25-29),

- the second signature (SIG2) is obtained from the address of the critical instruction, that address being stored (E30) at the same time as or after the execution (E30) of the critical instruction (col. 14, lines 32-38), and

- the detection step (E60) detects an execution anomaly when the first signature (SIG1)

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and the second signature (SIG2) are different after the execution of the set of instructions (col. 10, lines 14-19).

As per claims 11 and 35, Naccache teaches the first signature (SIG1) and the second signature (SIG2) are error detector codes (CRC1, CRC2) calculated from the code or from an address of an instruction of the set of instructions (col. 5, lines 53-58), and in that the detection step (E60) detects an execution anomaly when the first signature (SIG1) and the second signature (SIG2) are different after the execution of the set of instructions (col. 10, lines 14-19).

As per claims 12 and 36, Naccache teaches that the error detector codes are cyclic redundancy check codes (col. 5, lines 53-58).

As per claims 13 and 37, Naccache teaches that the error detector codes are obtained by the logical combination (XOR) of the code or an address of at least one instruction of the set of instructions (col. 5, lines 53-58). Naccache teaches the use of CRC which perform logical combination (XOR included) in order to carry out the operation. Examiner is not giving XOR patentable weight here as the syntax implies XOR as an example of logical combination.

As per claims 14 and 38, Naccache teaches the first signature (SIG1) and the second signature (SIG2) are respectively obtained during the generation and the execution of the instructions from at least two elements chosen from:

the number of instructions in the set of instructions,

the **code** of at least one instruction of the set of instructions (col. 5, lines 45-51),

the **address** of at least one instruction of the set of instructions (col. 5, lines 45-51), and

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an error detector code calculated from the code or an address of at least one critical instruction of the set of instructions, the address being obtained during or after the generation of the executable code of the set of instructions (col. 5, lines 53-59), and in that the detection step (E60) detects an execution anomaly when the first signature (SIG1) and the second signature (SIG2) are different after the execution of the set of instructions (col. 10, lines 14-19). Naccache teaches using the code and address as hash inputs thus two criteria from the list are chosen.

As per claims 15 and 39, Naccache teaches that it includes a step (E70) of destroying at least a portion of the system on which the computer program is executed, this step of destroying being made when an execution anomaly is detected in the detection step (col. 4, line 45).

As per claim 16, Naccache teaches in that the first signature (SIG1) is generated automatically [already generated before execution of program] (col. 4, line 25-30).

As per **claim 17**, Naccache teaches a device for processing a computer program including a set of at least one instruction, characterized in that it includes means (12) for calculating and storing a first signature (SIG1), the first signature (SIG1) stored in a memory and the first signature is representative of the intended execution of the set of instructions prior to the execution thereof (col. 4, lines 25-30), said set of instructions comprising at least one critical instruction in the form of a jump instruction of any type within the sequence of instructions of said set of instructions (col. 14, lines 33-35).

As per claim 18, Naccache teaches the first signature (SIG1) [Vref] are adapted to calculate and store information obtained from the number of instructions of the set of instructions (col. 9, line 65 - col. 10, line 5).

As per claim 19, Naccache teaches the means (12) for calculating and storing the first signature (SIG1) are adapted to obtain and store information obtained from the code of a critical instruction [jump] of the set of instructions (col. 14, lines 33-35).

As per claim 20, Naccache teaches means for generating executable code from the computer program (col. 8, lines 35-36).

As per claim 21, Naccache teaches the means for calculating and storing the first signature (SIG1) are adapted to obtain and store information obtained from the address of a critical instruction (col. 5, line 51), the information being obtained of the set of instructions by the means (14) for generating executable code (col. 8, lines 35-40).

As per claim 23, Naccache teaches that the means (12) for calculating and storing the first signature (SIG1) are adapted to calculate and store information obtained from an error detector code (CRC1) calculated from the code or an address of at least one instruction of the set of instructions (col. 5, lines 53-58).

As per claim 24, Naccache teaches that the error detector code (CRCI) is a cyclic redundancy check code (col. 5, line 57).

As per claim 25, Naccache teaches that the error detector code is obtained by a logical combination (XOR) of the code or an address of at least one instruction of the set of instructions (col. 5, lines 53-58). Naccache teaches the use of CRC which perform logical combination (XOR included) in order to carry out the operation.

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Examiner is not giving XOR patentable weight here as the syntax implies XOR as an example of logical combination.

As per claim 40, Naccache teaches a microcircuit card [smart card] characterized in that it includes a securing device according to claim 26 (col. 6, lines 27-35).

Conclusion

Newly found prior art not used in the rejection of the claims but deemed pertinent to the invention are disclosed on the enclosed PTO-892 form.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **MICHAEL R. VAUGHAN** whose telephone number is

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(571)270-7316. The examiner can normally be reached on Monday - Thursday, 7:30am - 5:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Vu can be reached on 571-272-3859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MRV

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/Syed Zia/

Primary Examiner, Art Unit 2431